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JC813 U.S. PTO

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Commissioner of Patents
Patent Application Branch
2011 South Clark Place
Crystal Plaza 2
Arlington, VA. 22202

RE: Patent Application enclosed

Inventor: William F. Reeves

Date: 5/31/00

Dear Sir/Madam,

Enclosed please find the patent application filed this day.

Enclosed is a check for \$475.00 to cover the filing. I have determined the filing fee based on your published fee schedule:

Small entity Fee	\$375.00
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Sincerely,



William Reeves

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: William Reeves)
SERIAL NO.:)
FILED:)

FOR: COMPUTER INSTRUMENTS AND EMERGENCY
MONITORING DEVICES FOR RETRIEVING AND
DISPLAYING STORED MEDICAL RECORDS
FROM BODILY WORN DEVICES

DECLARATION OF CLAIMING SMALL ENTITY STATUS
[37 CFR 1.9(f) AND 1.27 (C)] - SMALL BUSINESS CONCERN

I hereby declare that I am the Owner of and am empowered to act on behalf of the following named small business concern:

Med-*DATA* Net LLC
200 Shaw Road
P O Box 23
North Haven, Connecticut 06471

I hereby declare that the above mentioned small business concern qualifies as a small business concern as defined in 37 CFR 121.3-18, and reproduced in 37 CFR 1.9 (d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare the rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled "COMPUTER INSTRUMENTS AND EMERGENCY MONITORING DEVICES FOR RETRIEVING AND DISPLAYING STORED MEDICAL RECORDS FROM BODILY WORN DEVICES", by William Reeves, as described in Specification filed herewith.

If the rights held by the above mentioned small business concern are not exclusive, each individual, concern, or organization having rights to the invention is listed below and no rights to the inventions are held by any person, other than

the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or a non-profit organization under 37 CFR 1.9(e). Separate verified statements from each named person, concern, or organization having rights to the invention averring to their status as small entities are submitted herewith (37 CFR 1.27).


Full Name and Address

Small Entity Status

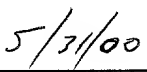
None

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate [37 CFR 1.28(b)].

I hereby declare that all statements made herein of my own knowledge are true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.



William Reeves
Owner



Date

U. S. PATENT APPLICATION

OF

WILLIAM REEVES

FOR

COMPUTER INSTRUMENTS AND EMERGENCY MONITORING DEVICES

FOR RETRIEVING AND DISPLAYING STORED MEDICAL RECORDS

FROM BODILY WORN DEVICES

CERTIFICATION OF MAILING UNDER 37 CFR 1.10

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I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner for Patents & Trademarks, Attn: Patent Application Branch, 2011 South Clark Place, Crystal Plaza 2, Arlington, VA. 22202

Name: William F. Reeves Signature: WFR

instructions which have become very common place and vital to the medical community as well as the individual. Integral to the use of the Bodily worn digital storage devices (BWD) are the inventions disclosed herein which are medical monitors, personal computers, portable display devices and interface electronics used to organize medical records, as an option- encrypt the records for security, transmit the records through interface electronics and "burn in" the data on computer chips and other suitable storage media located within and part of the BWD. There are several embodiments of the invention disclosed herein which will most likely be the most convenient and usable commercial versions of the invention. These include: 1. a portable field unit which will include a display screen, microcomputer, interface wand, software, and a means of transmitting data back to a base unit in an emergency 2. an interface module which, in lieu of an entire new patient monitor, can be added to an auxilliary electronic card slot in an existing patient monitor and add the capability of accepting data from the Interface Wand and BWD without adding a lot of additional cost to the health care system, 3. a more substantial Base Unit which would be most likely a PC based system and include software for organizing and editing medical data and records, as an option- encrypting those records for confidentiality and security, and sending those records directly through the Interface Wand to be "burned in" and stored within the BWD in digital storage media such as a computer chip. Although there are many "canned" and "off the shelf" software packages currently available there is none which would allow for a concise, highly organized and standard format for displaying of emergency medical records. Since time is of the essence and correct treatment and medical intervention is often a life or death situation it is essential to have the stored medical records in a highly organized, concise standard format so an EMT can go right to the critical information, assess the best medical treatment options and act accordingly. This highlights the need for unique software to organize the emergency medical records and information into concise and edited format for easy use and such software is disclosed herein as part of this invention.

There has been prior art in the medical industry which, although peripherally related to medical records and computer systems, does not teach the art or devices

described herein. Doue in 5,361, 202 teaches a computer system and software specifically for the purpose of managing a patients stay in a hospital or clinic. Doue makes no mention of organizing or applying any critical emergency medical information, makes no mention of using or interfacing with Bodily

- 5 Worn Devices or Medical cards and in general Doue's invention in no way completes with the invention disclosed herein. Since the invention disclosed herein is not used in any way, and makes no claims to manage the time frame for a patients stay in a hospital, these two patents really have nothing more in common than the fact that they use a screen and a microprocessor. Whalen in 5,327,341 teaches a computer
- 10 system and software for managing general medical records and files in a hospital and physician office environment. Whalen focuses on the software side of his invention and teaches means of creating headers and organization categories for large amounts of medical information. No where in his invention does Whalen teach organizing Emergency Medical information for emergency medical treatment which
- 15 is created for the purpose of storage on Bodily Worn and/ or Digital Storage cards or disks. No where does Whalen teach any of the Interface Wand, Interface module and data transmission features of the devices disclosed in this invention. The main claims of the Whalen patent deal with managing and updating an individuals medical records in a routine office based setting using key words, hybrid data fields ,etc.,
- 20 which this invention is not claiming and for applications this invention has no intention of addressing. Eberhardt in 5, 659, 741 teaches a medical history computer system for recording medical histories aimed at organizing very large amounts of medical data for organizations such as the federal government for keeping track of medicare and medicaid and/or for large insurance companies. This
- 25 differs from the invention disclosed in that the emergency medical data described herein is not stored in a central computer but is organized and stored on Bodily Worn devices. The inventions described herein are patient monitors and interface hardware specifically aimed at retrieving and displaying the stored emergency medical data . Eberhardt fails to teach any of the patient monitors, modules or
- 30 interface electronic hardware necessary to make the retrieval of emergency medical data a practical device. Although Ebehardt mentions cards or disks

to carry medical records he fails to teach any type of practical card or disk fails to teach how such a card or disk would be interfaced with a practical computer system or its components. An integral part of Ebehardt's inventions, which is not required by the invention disclosed herein, is the ability to sort for medical information and/or data by key word, phrase, etc.. This is not necessary for the invention described herein in terms of its software and is outside of the scope of this invention.

3. Summary of the Invention

The invention disclosed herein has several different embodiments described in the Background narrative. What all of these embodiments have in common is:

- interface hardware and electronics, embodied in the form of the Interface Wand and electronic card module, for electrically powering and retrieving the data from the bodily worn devices in a wireless, non-contact fashion

- software which is compatible with the software and organization platform of the Bodily Worn devices for retrieving, organizing and displaying the stored records in rapid format for emergency situations.

- some form of a screen display which could include an LCD screen, video screen, cathode ray tube, or computer screen for displaying the records in emergency situations.

- a means of periodically updating the records stored on the Bodily Worn devices by interfacing the Bodily Worn device with the monitors, either using the Interface wand and a direct connection to a monitor or via the wand and an interface box which could be used to modem information into the Bodily Worn device from a remote location.

- as an option but not a requirement - a means, through unique software encryption and recognition techniques, to interface with unique smart cards and/or unique computer disks which have permanently imbedded software security identification markers. This type of a marker and recognition system allows for only authorized types of disks and card, which have the unique embedded digital markers, to be used and recognized by the system software for security and anti fraud purposes. The alternative, which is an embodiment

of this invention, is to have an open architecture software.

-smart software and two way data transmission between the interface hardware and the Bodily Worn devices and cards and disks. This smart software allows for recognition of encrypted security markers to eliminate unauthorized entry to the devices and well as for anti fraud purposes during data transmission.

-electronic cases and enclosures which make the devices herein either rugged and portable for field use and/or military use, enclosures and electronic covers for the module. Interface to safely add the module and upgrade to an existing patient monitor, or an enclosure for making the devices desk top and fairly stationary for use in an office environment.

Detailed Description of the Invention

Reference Figure 1

Figure 1 represents a flow chart of how the integral hardware components of the system would interface. Either the portable field unit 29, patient monitor module 30 or base unit monitor 28 can send or retrieve data from the Bodily Worn Devices 32 (BWD) via the Interface Wand 31. In turn, either the Portable Field Unit 29 or the Patient Monitor Module 30 can also send data to and from the Base Unit Monitor 28 via either telephone lines, wireless AM or FM transmission or any other appropriate transmission means. The interface wand 31 is an integral part of the system for sending and retrieving data from the BWD 32. The Interface Wand 31 has a means of simultaneously sending electrical power to the BWD 32 via wireless inductance means while at the same time sending and retrieving data from the BWD 32 via either optical or wireless data transmission. The detailed disclosure of the art of the Interface Wand 31 and BWD 32 are covered in another US patent filing by this inventor. As previously described the portable field unit 29 and and from the Interface Wand 31, to display medical data on a screen for Emergency Medical treatment, and to send the data wireless or over telephone lines to other stations. The patient monitor module 30, which is an electronic card which fits into an existing patient monitor, is described in more detail in figure 5. Common software allows the

devices disclosed herein to communicate, send and retrieve data and encrypt data in secure means for confidentiality and security.

Reference Figure 2

5 Figure 2 shows a schematic of the software and its flow in terms of data transmission through the various pieces of hardware in the system. Two way data transmission is important through each piece of hardware to allow for medical data and records to be both sent and retrieved through the Interface Wand 26 and into and out of the BWD 27. As shown in figure 4 Emergency Medical Records 16 are
10 organized by the software into pages or files 17 with discrete information organized in sections or blocks to create a standard page. This standard page 17 is important in that in the event of medical emergency time is critical and if a standard page is created for EMT's and technicians then they know exactly where to look to get critical life saving information without searching. The software is organized as
15 such so that Emergency Medical records are created for a patient either from the Base Unit 24, Portable Field Unit 25 or Ambulatory Patient Monitor 28, but most preferably in the Base Unit 24. The Patient files 17 are encrypted to provide for security during transmission over telephone and data lines. The software is organized as such so the patient files are transferred through the Interface Unit 26
20 or Wand into the BWD 27 in file or page format. These patient files 17 are organized through the software in generic ASCII type files so as to be retrievable and readable using standard software packages in conjunction with our unique decryption software. As an alternative and/or enhancement to the encrypting of the medical files security software markers could be written into the medical record files
25 so that only persons with compatible software which can recognize the security markers would be allowed to retrieve and open the medical records 17 stored on BWD's 27 or on electronic cards or disks.

Reference figure 3

30 Figure 3 shows one variation of how all of the components of the system work including the Bodily Worn Device 21, Interface Wand 20, Portable field unit 19, Base unit 18 and controlling software. When the wearer of the BWD 21 is stricken with

any illness or is in an accident, etc. an EMT, paramedic, military corpsman, etc, can access the critical medical data using the portable field unit 19, assess the stricken persons overall condition using the pre-existing medical history and data in the BWD 21, and rapidly determine the best coarse of medical treatment, which could prove life saving. The portable field unit 19 has the ability to transmit medical data and treatment options to the base unit 18 and visa versa, so hospital based medical personnel can communicate directly with the field paramedic.

An integral part of this invention is the design and inter-related working mechanism between the BWD 19, storage cards 7 and storage disks 3. This is expanded on in figure 6 of this invention.

Reference figure 4

Figure 4 shows one typical software configuration for the Emergency Medical Record organization. The medical data 16 can either be in file or page format 17 with discrete blocks or sections of a page devoted to specific information so as to create a standard and easily recognizable format in an emergency situation. Menus or point and click software commands can be set up so as to allow the user to rapidly scroll through pages to find information.

Reference Figure 5

Figure 5 shows one typical configuration for the hardware module which would be used in conjunction with an existing patient monitor in an ambulance, emergency room, etc. The plug in module 15 consists of a faceplate with controls, switches 8 , for on/off power, data transmission indicator lights, power indicator light and any other appropriate controls and indicator lights. An Input/Output type printed circuit card 9 is mounted to the faceplate and all electronic components and circuitry are mounted to the pc board. The electronic circuitry for supply power to the board, as well the circuitry which routes the data signals through the card, are routed to electronic contact pads or fingers 10, as they are known in the industry. The pads 10,11,12 are either silver or gold plated and allow the pc board 9 to be plugged into the mating slot in the patient monitor so as to accept electrical power from the patient monitor

and allow medical records and data to be transmitted and received through the pc board 9 and its connecting pads. As previously described the data cable 14 connects the Interface wand 13 to the front panel of the module 15. The cable 14 allows data to be transmitted from and sent to the Bodily worn devices using either fiber optic, serial or parallel two way data transmission.

Reference Figure 6

As previously mentioned the design and working mechanism of the Interface wand 1, as it relates to Bodily Worn Device 2 or Card or Disk 3 & 7 , is critical. The two devices and their working mechanisms as described herein are unique and novel. This inventor has also written and submitted a separate patent on the Digital Card and Disk 3 & 7 and mechanisms to read and transmit data. Figure 6 shows three typical embodiments of this invention and this is not to say that more embodiments do not exist which are contemplated by this inventor. The Interface wand 1 is designed in Embodiment a) to include a housing, electrical power pads to supply power to the BWD 2 via inductance or other non-contact means, data transmission 8 and retrieval capacitance pads 9 to allow bi-directional flow of digital data in a non-contact manner, a means of aligning the wand and BWD so as to make positive mechanical alignment between the power 9 and data pads 8 . Embodiment b) shows an alternative design of the Wand whereby a case or slot enclosure 4 will allow either the BWD 2, a card or disk 3 & 7 to be inserted into the slot. The power pads and data transmission pads are mounted on the interior wall of the enclosure 4 so as to provide protection in the event the wand is dropped or hit. The slot enclosure and BWD, card, disk 3 are designed so the electrical power pads 9 and data pads 8 make proper alignment when the BWD 3 is inserted and hits a mechanical stop in the slot. Embodiment c) shows a wand 6 with a mechanical slot for insertion of a storage disk or card 7. In this embodiment only an optical read/write pad 5 is required. Since the digital data is stored on an optical film or polymer on the surface of the disk or card 7, in a similar manner as a compact disk, neither the wand nor disk 7

- 30 require any power to retrieve the digital information from the disk 7. It should be noted that power is required to be sent to the optical scanner in the wand so as to power its operation. The bi-directional reading and writing of data to and from the disk or card 7 can be accomplished with a plurality of optical scanner / writer pads 5 mounted to the inside of the wand enclosure 6.

Claims:

- 1 1. An apparatus for storing and/or retrieving and/or organizing medical
2 records and other vital personal information from bodily worn storage
3 devices, comprising:
 - 4 a bodily worn storage device capable of storing digitized (digital)
5 personal medical records and other vital personal emergency information
 - 6 a portable field unit with a unique interface wand capable of retrieving
7 digital patient records and information from the bodily worn device and
8 transmitting said digital information by wireless means
 - 9 a base unit capable of receiving said digital medical records and
10 information and organizing them into readable and medically significant
11 information for emergency medical treatment options
 - 12 a patient monitor module for interfacing the wireless critical patient
13 information and data with an existing emergency room patient monitoring
14 device
 - 15 software for digitizing and organizing and displaying said critical patient
16 information in page formats for emergency medical treatment and other
17 applications and usage
 - 18 software for controlling the internal logic of the portable field unit and the
19 patient monitoring module and the base unit.
- 1 2 The apparatus of claim 1 wherein the interface wand is capable of
2 capturing said digital medical records by non-contact optical or wireless
3 means
- 1 3. The apparatus of claim 1 wherein the bodily worn device is capable of
2 transmitting or receiving said digital medical records from the interface
3 wand by non-contact optical or wireless means.
- 1 4. The apparatus of claim 1 wherein the portable field unit is capable of
2 recieving, storing and displaying said medical records on a lighted display
3 screen via the interface wand.
- 1 5. The apparatus of claim 1 wherein the portable field unit is capable of
2 wireless transmission of the said digital medical records to said base unit.

- 1 6. The apparatus of claim 1 wherein the portable field unit is programmed
2 with software to allow for the organization and display of said digital
3 medical data.
- 1 7. The apparatus of claim 1 wherein the interface wand is capable of
2 transmitting or receiving wireless digital information from the said bodily
3 worn device using optical or other wireless- non contact means
- 1 8. The apparatus of claim 1 wherein the base unit is capable of receiving
2 said digital records in a wireless fashion
- 1 9. The apparatus of claim 1 wherein the base unit is capable of storing
2 and organizing the medical records and critical information into prioritized
3 pages for display and viewing.
- 1 10. The apparatus of claim 1 wherein the base unit contains software for
2 the logic control of receiving said digital records, organizing said records
3 in priority fashion and displaying said prioritized records on the display
4 screen.
- 1 11. The apparatus of claim 1 wherein the base unit is capable of archiving
2 and storing multiple digital patient records for retrieval and review.
- 1 12. The apparatus of claim 1 wherein the patient module is capable of 2
interfacing with an existing emergency room patient monitor and receiving
3 said wireless transmission of said medical records for display on said
4 existing patient monitor in an emergency situation.
- 1 13. The apparatus of claim 1 wherein the patient module contains an
2 interface Printed circuit board with electronic contact pads, or other
3 suitable means, for transmitting power to the module board and for
4 transmitting and receiving said digital patient medical records.
- 1 14. The apparatus or claim 1 wherein the patient module contains an
2 interface wand and electronic cable for capturing said digital records from
3 said bodily worn device, using non-contact wireless means, and
4 transmitting said records to the patient monitor for storage and display.

1 15. The apparatus of claim 1 wherein the system contains common
2 software and logic for the seamless storage, wireless transmission,
3 receiving, prioritizing, creation of readable pages and displaying of said
4 pages on a computer screen, patient monitor screen or other appropriate
5 display device.

1 16. A method for storing and/or retrieving and/or organizing medical
2 records and other vital personal information from bodily worn storage
3 devices , comprising:

4 providing a bodily worn storage device capable of storing digital medical
5 records and other vital personal health/emergency information and
6 a means of transmitting and receiving said digital medical records
7 to and from the bodily worn device in a wireless fashion from a
8 wireless receiving transmitting wand which would be either
9 attached to a portable storage device or a patient monitoring
10 device and be capable of displaying said medical data and records
11 on a computer display screen for use in a medical emergency or
12 other situation and a means of transmitting said medical records
13 from the portable field unit to a base unit for display and review by
14 a medical professional and for storage and archival purposes

1 17 The method of claim 16 further including organizing the digital
2 medical records stored in the bodily worn device into electronic pages
3 which are in a medically significant prioritized manner with most critical
4 information in a life threatening situation be accessible first and lesser
5 medical information and personal information be accessible secondary.

1 18. The method of claim 16 further including transmitting said digital
2 medical information from the bodily worn device to the portable field unit
3 using optical or other wireless means via a wand or other suitable means.

1 19 The method of claim 16 further including means of storing, organizing,
2 prioritizing and displaying said digital medical records on the portable unit
3 for emergency medical treatment.

1 20. The method of claim 19 further including a means of transmitting the
2 said medical records from the portable field unit via wireless or wired
3 means to a base unit.

- 1 21. The method of claim 16 further including a means of transmitting said
2 digital medical records from the bodily worn device to a multi use patient
3 monitor via wireless non contact means.
- 1 22. The method of claim 21 further including a means of organizing ,
2 prioritizing and displaying said medical records on the patient monitoring
3 screen for emergency medical or other medical usage.
- 1 23. The method of claim 20 further including a means of transmitting said
2 digital medical records from the portable field unit to a base unit via
3 wireless or wired means.
- 1 24. The method of claim 23 further including a means of organizing,
2 prioritizing and displaying said medical records within the base unit for
3 emergency medical treatment.
- 1 25. The method of claim 24 further including a means of prioritizing
2 medical records in a medically significant fashion so most critical life
3 saving medical information, tailored to the individual wearing said bodily
4 worn device, is displayed first in a medical emergency and . secondary
5 medical information is displayed secondary on subsequent sequential
6 pages.
- 1 26. The method of claim 16 further comprising a means to allow for a
2 common software language so that the digital information and medical
3 records within the bodily worn device is compatible with the portable unit,
4 the patient monitor and the base unit in a seamless and efficient manner.
- 1 27. The method of claim 16 further comprising a means of updating an
2 individuals digital medical records within the bodily worn device via
3 transmission of updated data from the base unit or portable unit to the
4 bodily worn device via wireless or wired means.
- 1 28. A method of claim 16 further comprising a means of erasing data
2 within a bodily worn device and re-writing new and/or updated digital
3 medical records within the bodily worn device via wired or wireless
4 transmission from the portable field unit or the base unit.

COMPUTER INSTRUMENTS AND EMERGENCY MONITORING DEVICES FOR RETRIEVING AND DISPLAYING STORED MEDICAL RECORDS FROM BODILY WORN DEVICES

5 1. Abstract

A method and device is disclosed herein to teach either patient monitors with microprocessors and screen displays and portable devices with screens and dedicated desk top monitors with displays for programming and retrieving stored and encrypted medical records and patient information onto bodily worn storage
10 devices and/or digital storage cards and digital storage disks. Also disclosed is a unique interface wand, electronic circuitry and software for transmitting and receiving by directions digitized medical records and data.

2. Background of the Invention

Simple, bodily worn, medical bracelets and medallions have been used for
15 many years by individuals with serious medical conditions to alert emergency medical personnel in the event the wearer is stricken and unconscious that the wearer has a serious pre-existing medical condition which requires special medical treatment. Although these simple bracelets and pendants have been useful they lack the space and storage capacity necessary hold critical lifesaving medical
20 information and any electronics to interface with modern patient monitors and or electronics. Such critical lifesaving information includes: blood type, a description of pre-existing medical conditions, photo ID or other positive identification, ECG scan, Cardiac, Ultrasound scan, present drug usage and interaction cautions, severe drug and other allergic reactions. The invention disclosed herein, and
25 complimentary inventions disclosed by the inventor, teach the design of bodily worn devices which can store large amounts or digital medical records and have those records retrieved in a rapid wireless manner in the event of a medical emergency The Bodily Worn Device (BWD) can also be embodied into a digital storage card and/or medical computer disk which is disclosed in another invention by this
30 inventor. Also, other key medical and personal information which can be stored into the bodily worn digital devices include Organ Donor Instructions and Living Will

FIG.1

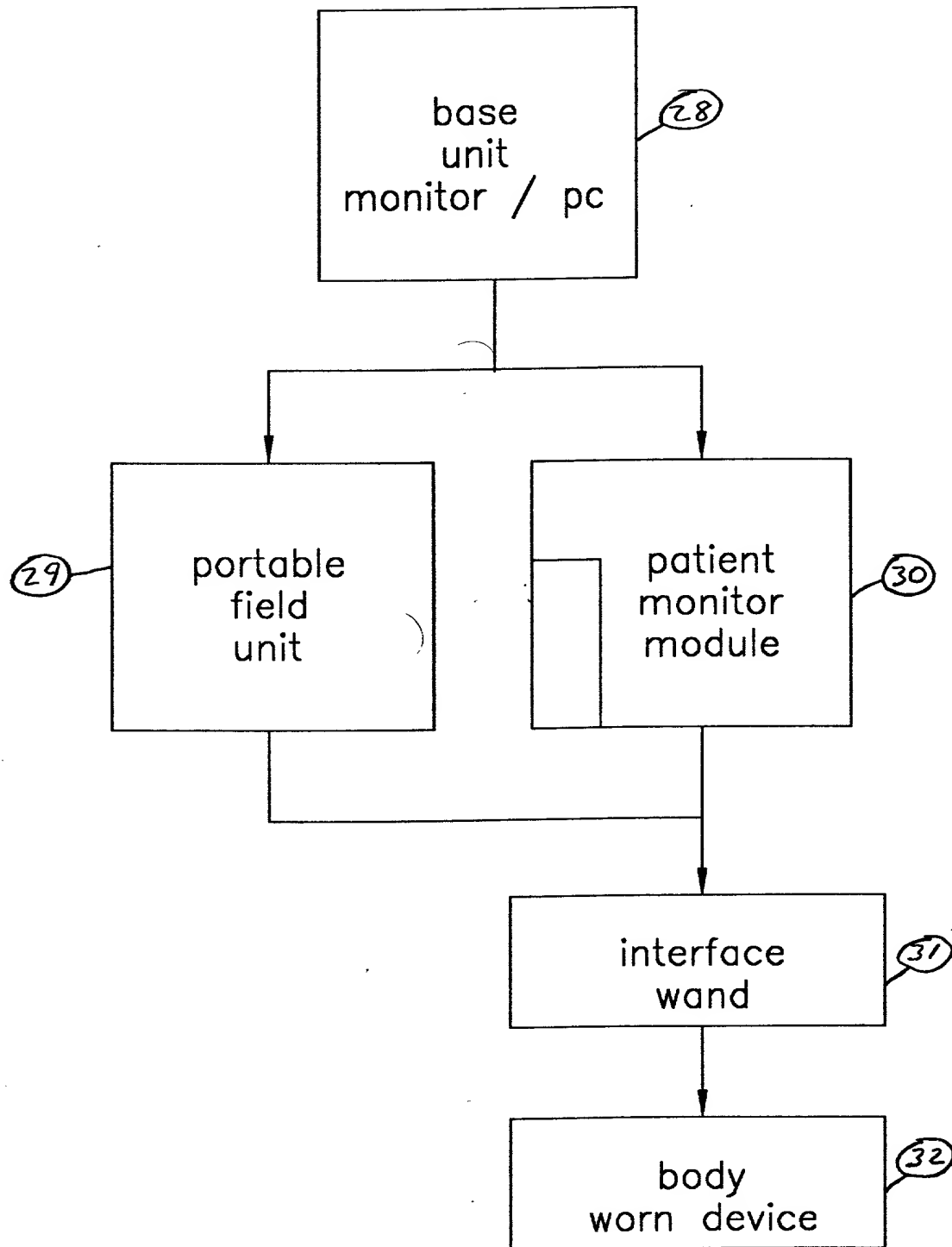


FIG. 3

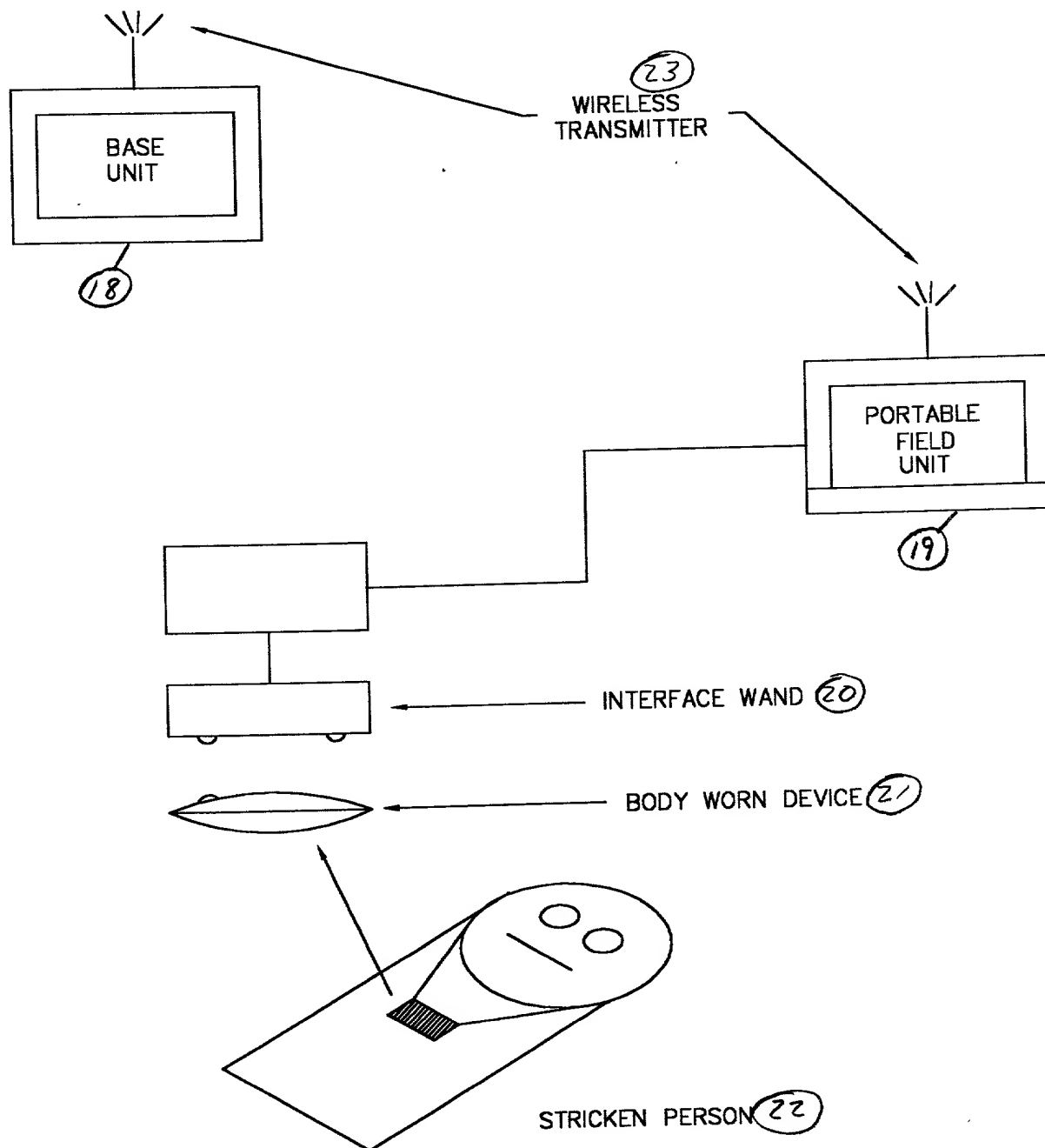


FIG. 4

16

PHOTO I.D.	FINGER PRINT	IRIS PRINT	DENTAL RECORDS	SAMPLE ECG ULTRASOUND
EMERGENCY MEDICAL RECORDS BLOOD TYPE DRUG REACTIONS PRE-EXISTING CONDITIONS				
EMERGENCY TREATMENT INSTRUCTIONS: PHYSICIAN PRE-EXISTING CONDITIONS				
ORGAN DONOR INSTRUCTIONS:				
LIVING WILL INSTRUCTIONS:				

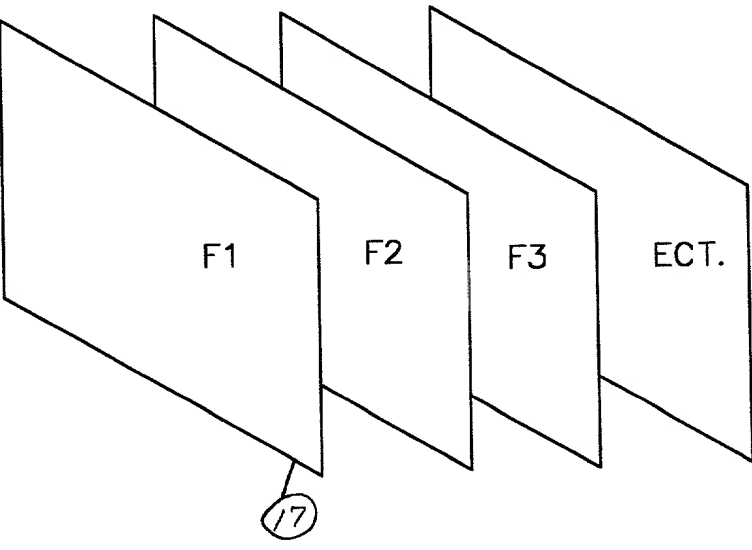
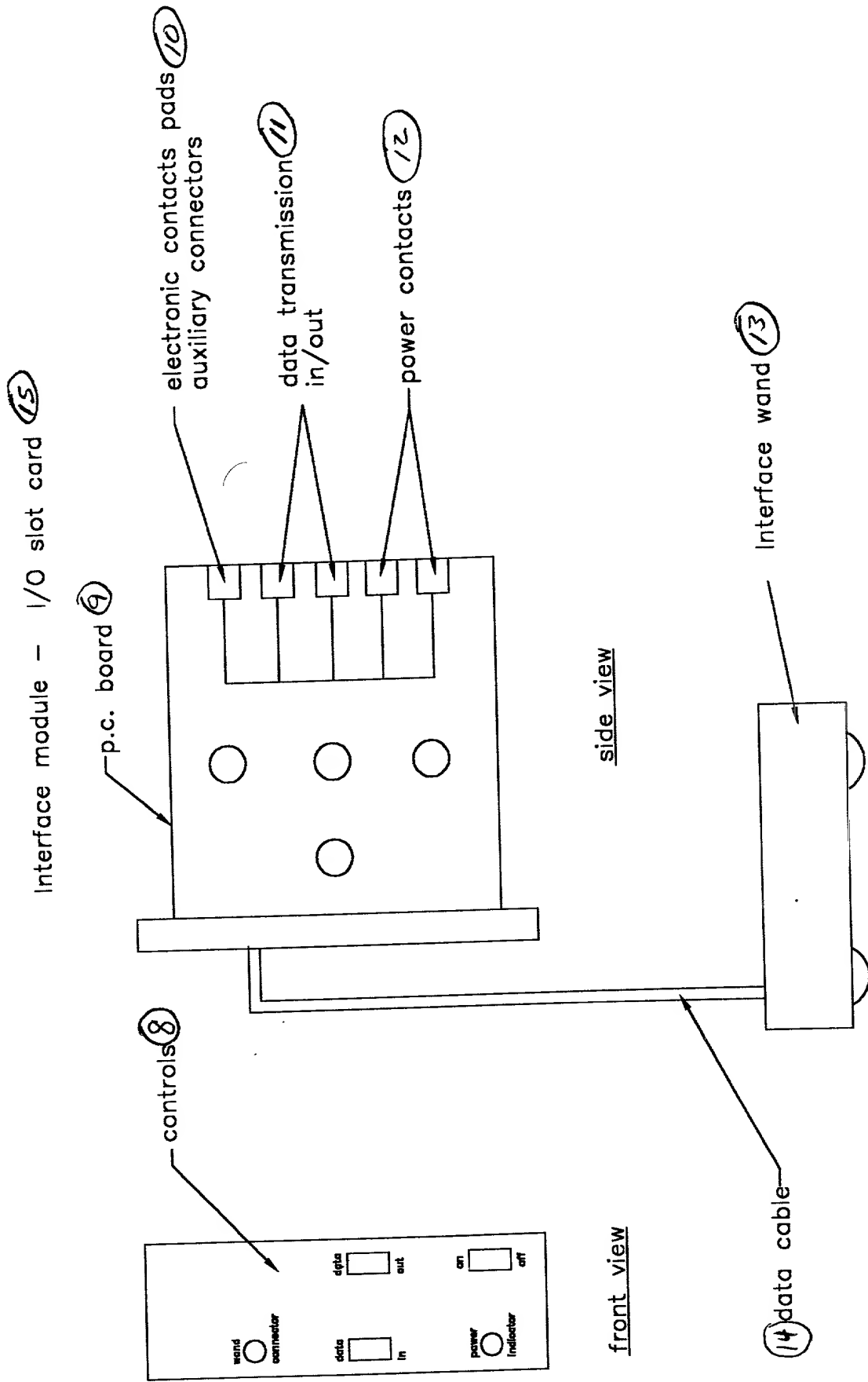
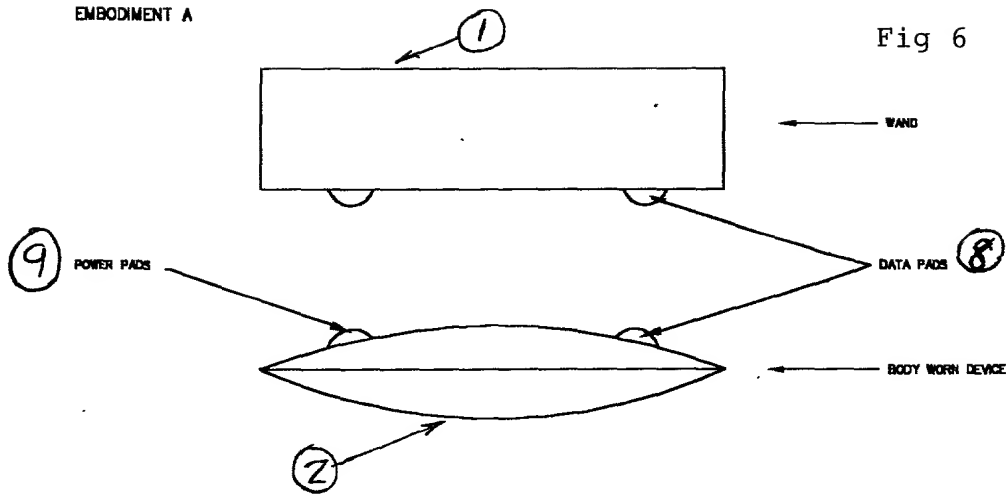


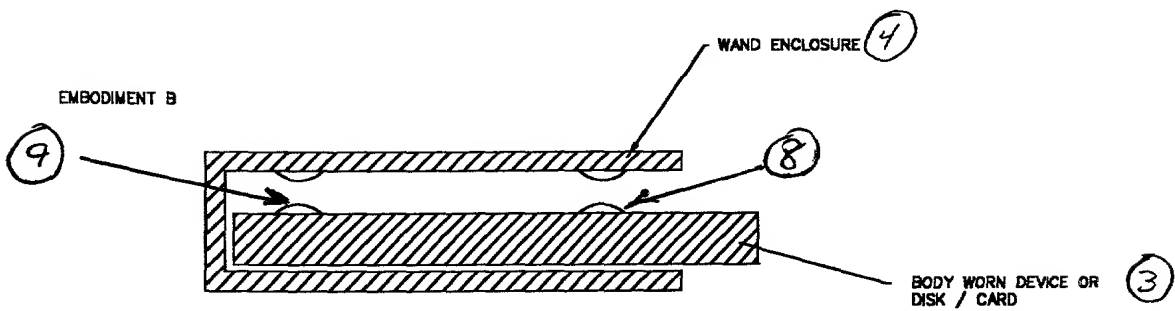
FIG. 5



EMBODIMENT A



EMBODIMENT B



EMBODIMENT C

